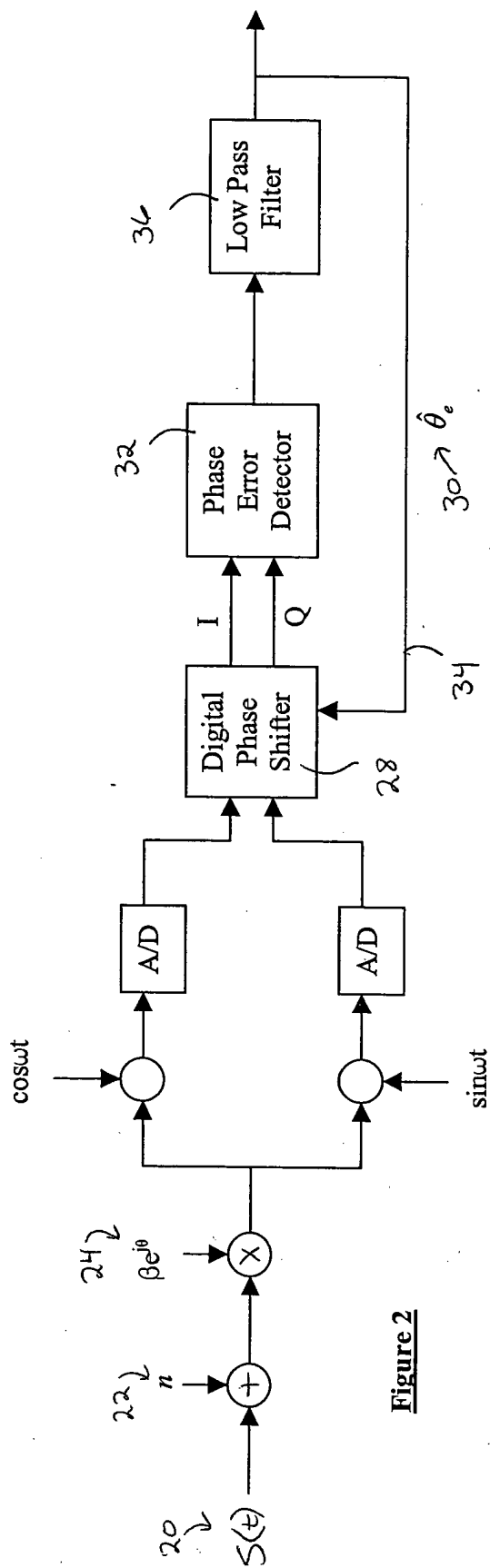**Figure 1: Prior Art**
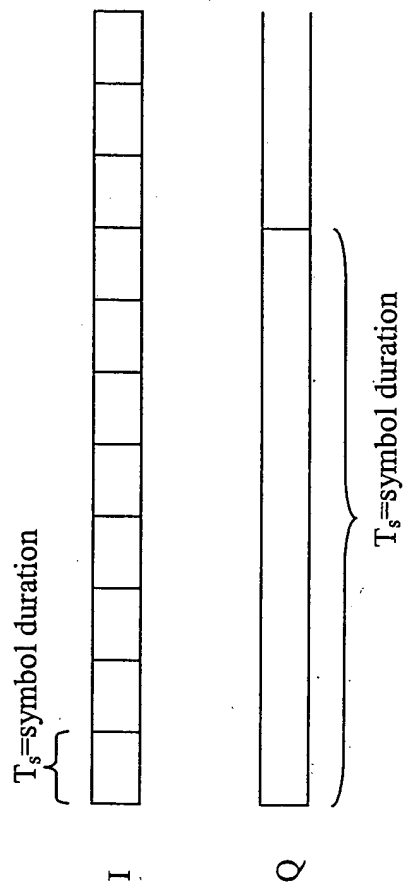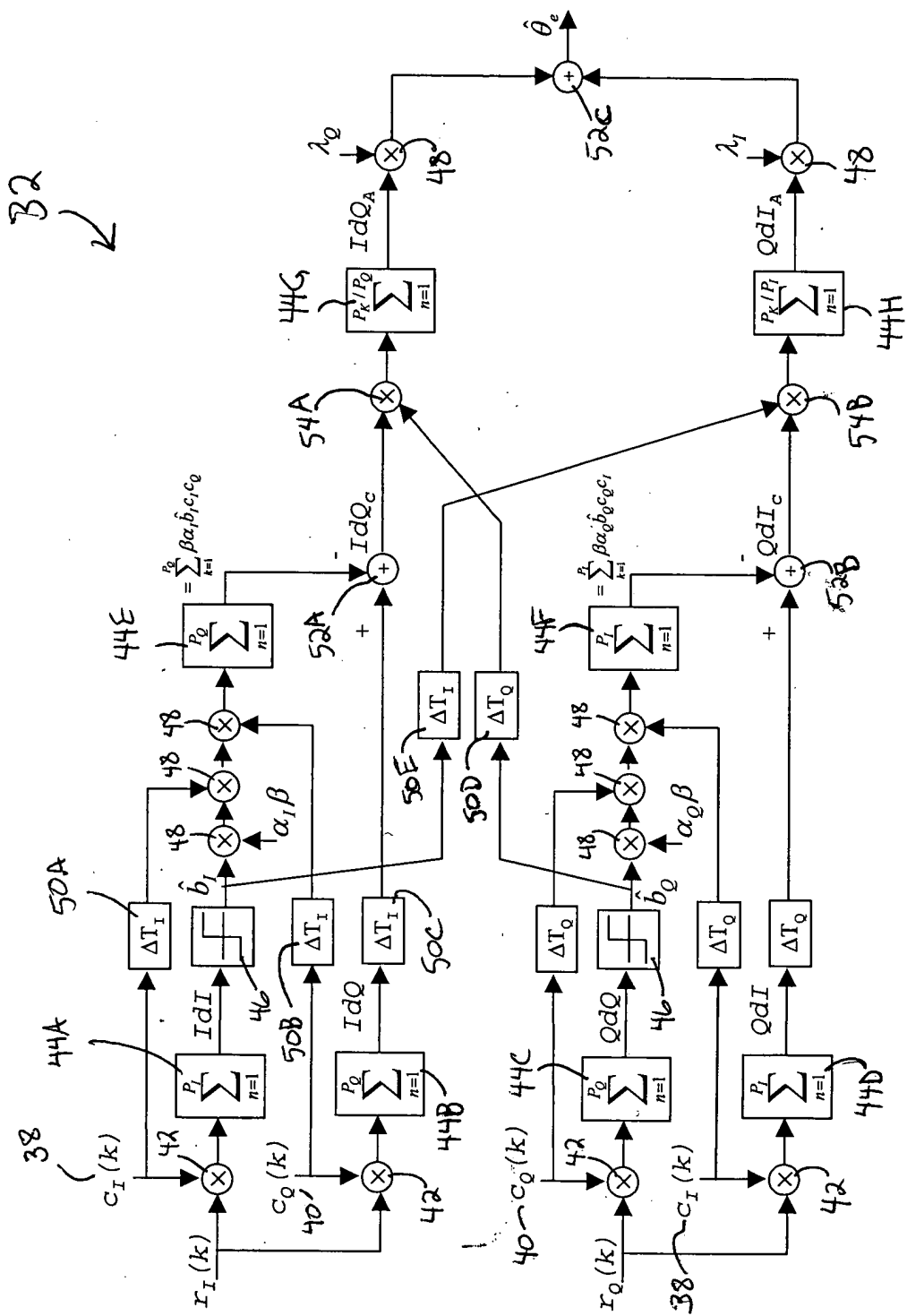
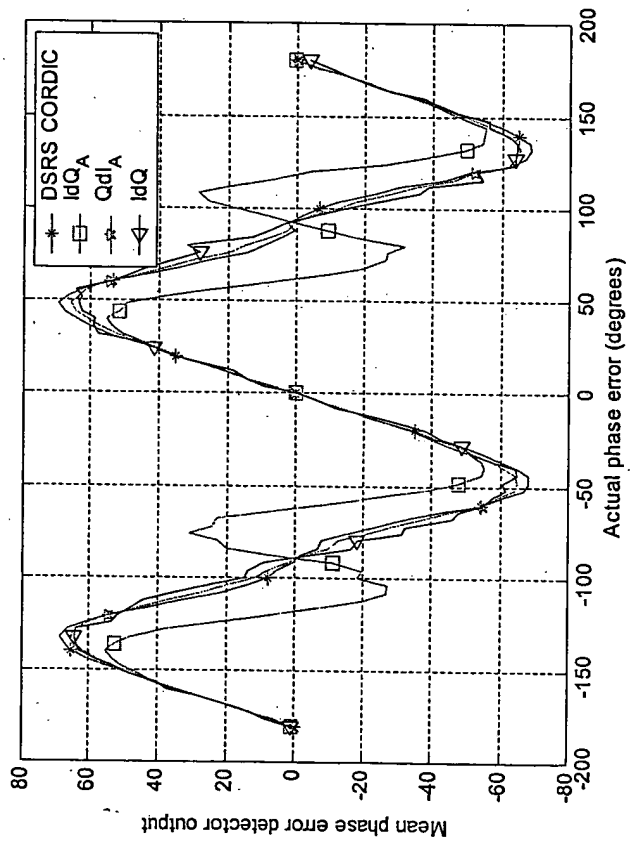**Figure 2**

Figure 3

Figure 4

Figure 5: S-Curves for various phase error detectors.

Present invention implemented on one channel (IdQ_A and QdI_A),

Co-pending invention (DSRS CORDIC), and
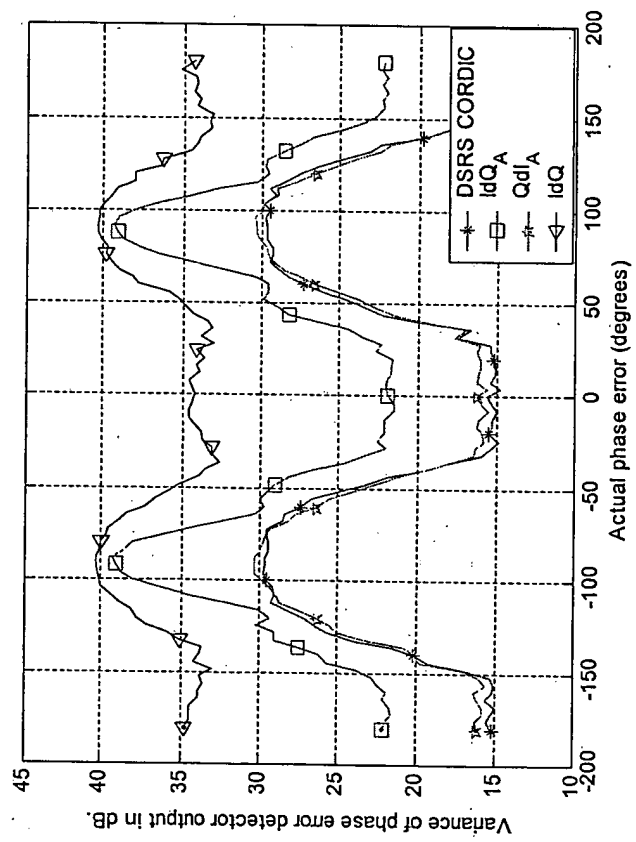Prior art method of driving I despread Q to zero.

Figure 6: Variance of the phase error detector outputs versus true angle error.